



GIVEN:  $\overline{BD} \cong \overline{DC}$   
 $\overline{AB} \cong \overline{AC}$

$m\angle CDO = x$ ;  $m\angle DBO = 18^\circ$

$m\angle OAC = 29^\circ$

---

FIND  $m\angle x$ ,  $m\angle y$

SOLUTION

$\triangle BAC$  - ISOSCELES ( $\overline{AB} \cong \overline{AC}$ )

$\overline{AO}$  - PERPENDICULAR BISECTOR

$m\angle CAO = m\angle BAO = 29^\circ$ ;  $m\angle A = 29^\circ + 29^\circ = 58^\circ$

$\angle CBA \cong \angle ACB$  BASE ANGLES OF ISOSCELES TRIANGLE

$m\angle CBA = m\angle y = \frac{180^\circ - 58^\circ}{2} = 61^\circ$ ;  $\boxed{m\angle y = 61^\circ}$

$\triangle BDC$  - ISOSCELES TRIANGLE ( $\overline{BD} \cong \overline{DC}$ )

$\diamond ABDC$  - KITE, THE NONVERTEX ANGLES ARE CONGRUENT  $\angle B \cong \angle C$

$\angle B = 18^\circ + 61^\circ = 79^\circ$

$m\angle D = 360 - (58^\circ + 79^\circ + 79^\circ) =$

$= 360^\circ - 216^\circ = 144^\circ$

$\overline{DO}$  - PERPENDICULAR BISECTOR

$m\angle x = \frac{m\angle B}{2} = \frac{144^\circ}{2} = 72^\circ$   $\boxed{m\angle x = 72^\circ}$